



JURONGVILLE SECONDARY SCHOOL
PRELIMINARY EXAMINATION 2022
Secondary 4 Normal (Academic)



STUDENT
NAME

CLASS

INDEX
NUMBER

SCIENCE (PHYSICS)

5105/01

Paper 1 Multiple Choice

19 AUGUST 2022

Papers 1 and 2: 1 hour 15 minutes

Additional Materials: Multiple Choice Answer Sheet

READ THESE INSTRUCTIONS FIRST

Write in soft pencil.

Do not use staples, paper clips, highlighters, glue, correction tape or correction fluid.

Write your name, index number and class on the Answer Sheet in the spaces provided.

There are **twenty** questions on this paper. Answer **ALL** questions. For each question, there are four possible answers, **A, B, C** or **D**.

Choose the **one** you consider correct and record your choice in **soft pencil** on the separate Answer Sheet.

Answers to Paper 1 and Paper 2 must be handed in separately.

Each correct answer will score one mark. A mark will not be deducted for a wrong answer.

You are advised to spend no more than **30 minutes** on **Paper 1**.

You may proceed to answer Paper 2 as soon as you have completed Paper 1.

Any rough working should be done in this booklet.

The use of an approved scientific calculator is expected, where appropriate.

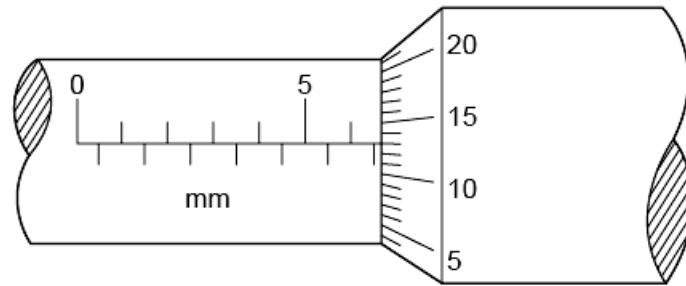
Take acceleration due to gravity on Earth, g , to be 10 m/s^2 unless stated otherwise.

For Examiner's Use

20

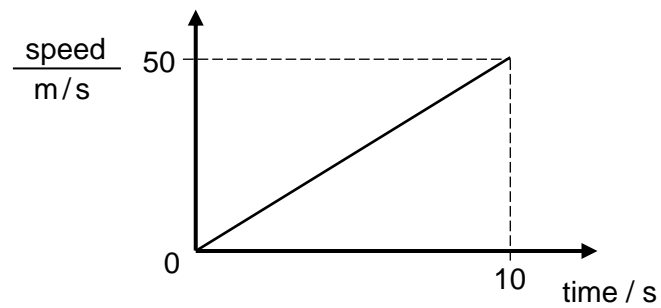
Setter: Raymond Tan

- 1 A student measures the diameter of a wire using a micrometer screw gauge.



What is the diameter of the wire?

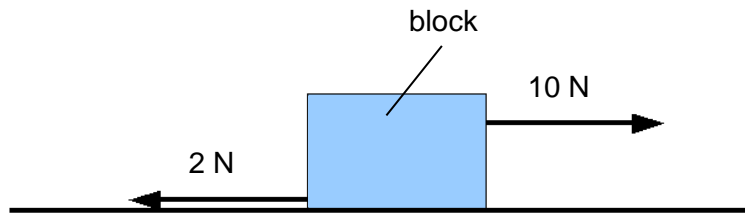
- A** 5.43 mm **B** 6.63 mm **C** 7.30 mm **D** 8.13 mm
- 2 The graph represents the movement of a truck.



How far has the truck moved between 0 and 10 s?

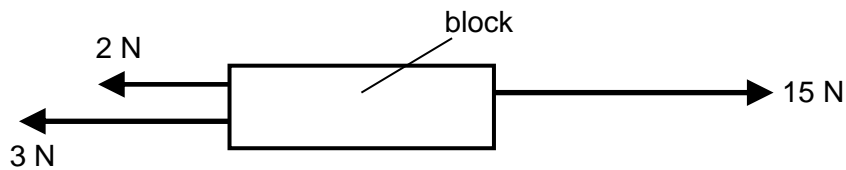
- A** 5 m
B 50 m
C 250 m
D 500 m

- 3 The diagram shows a block being pulled from rest on a rough surface.



What is the effect of these forces?

- A** The object moves to the left with constant speed.
B The object moves to the left with constant acceleration.
C The object moves to the right with constant speed.
D The object moves to the right with constant acceleration.
- 4 The diagram shows three forces acting on a block of mass 2 kg.



What is the resultant force acting on the block?

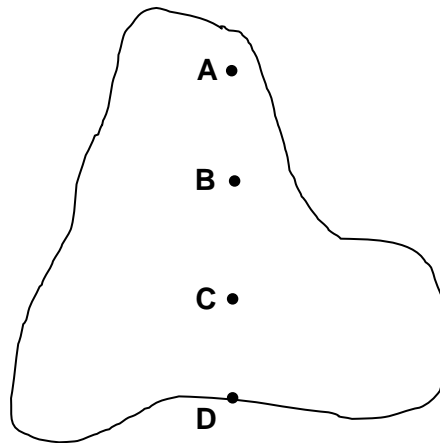
- A** 5 N to the left **B** 5 N to the right
C 10 N to the left **D** 10 N to the right
- 5 A spanner is taken to outer space in a rocket.

Which row describes the correct change(s)?

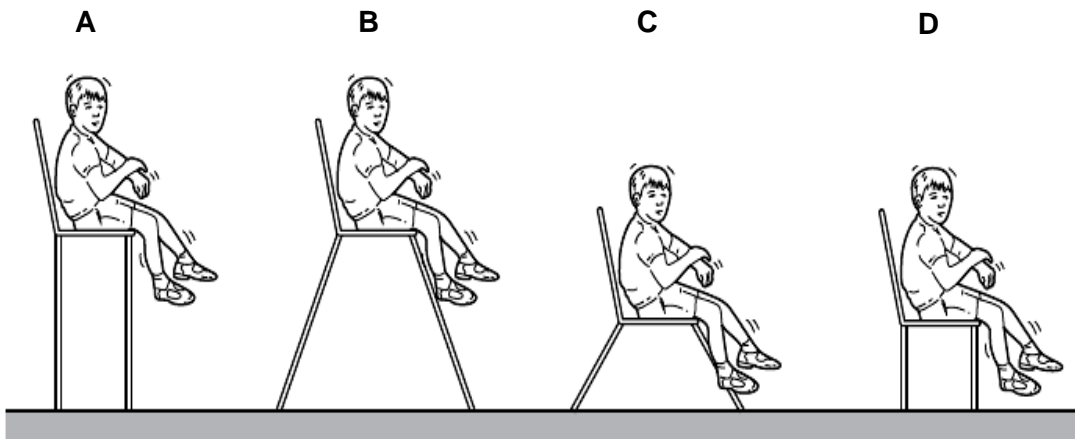
	change in mass	change in weight
A	no	no
B	no	yes
C	yes	no
D	yes	yes

- 6 A piece of cardboard of uniform density is suspended freely from a horizontal pin.

Which point is its centre of gravity?



- 7 Which chair is the **most** stable when the child moves back and forth with the chair?

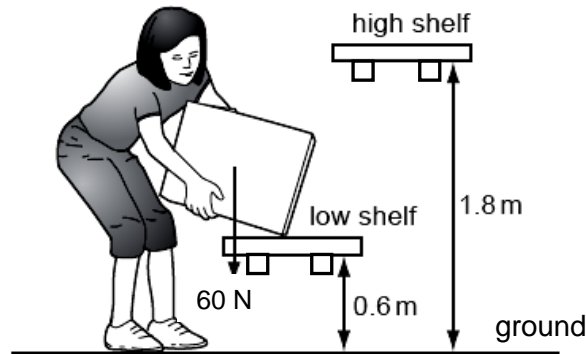


- 8 In a power station, fossil fuel is burned to boil water in a boiler.

What energy change takes place when the fuel is burnt?

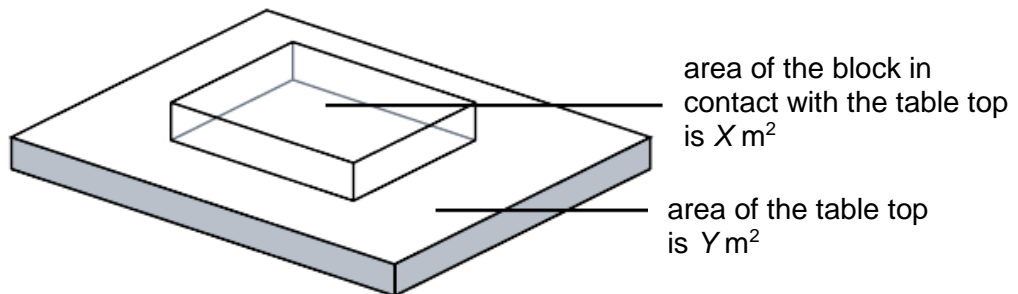
- A chemical energy \rightarrow heat energy
- B chemical energy \rightarrow kinetic energy
- C heat energy \rightarrow chemical energy
- D heat energy \rightarrow electrical energy

- 9 The diagram shows a woman lifting a box of weight 60 N from the low shelf to the high shelf.



What is the work done on the box by Mrs Lee?

- A 36 J B 72 J C 108 J D 144 J
- 10 The diagram below shows a glass block resting on a table top.



The area of the block in contact with the table is $X \text{ m}^2$ and the area of the table top is $Y \text{ m}^2$. The weight of the block is $P \text{ N}$.

Which expression gives the pressure exerted on the table by the block in N/m^2 ?

- A $\frac{P}{X}$ B $\frac{P}{Y}$ C $\frac{10P}{X}$ D $\frac{10P}{Y}$
- 11 A substance consists of particles that are close together and sliding over each other at random. The average speed of the particles is gradually increasing.

Which statement best describes the substance?

- A a solid being heated
 B a solid being melted to form a liquid
 C a liquid being heated
 D a liquid being boiled to form a gas

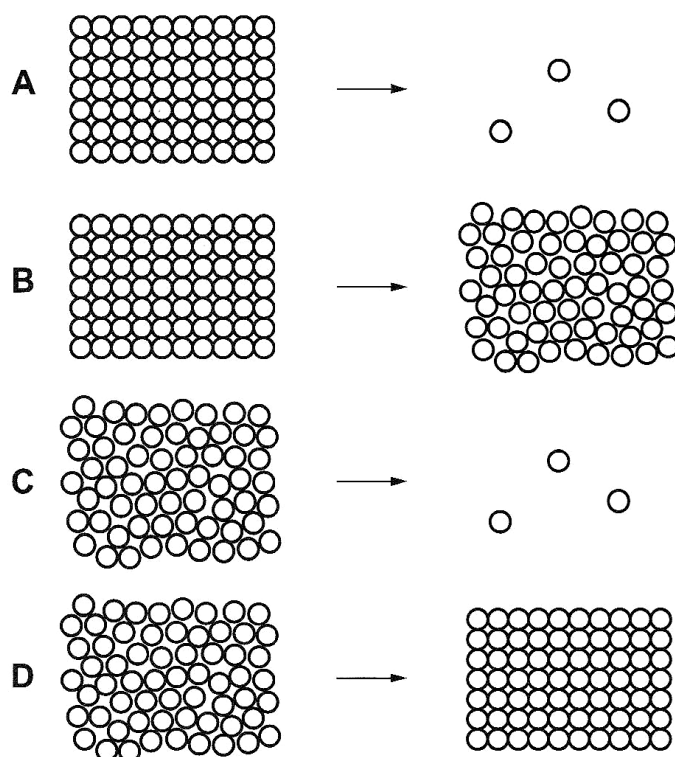
12 Which row describes the shape and volume of a liquid?

	shape	volume
A	fixed	fixed
B	fixed	not fixed
C	not fixed	fixed
D	not fixed	not fixed

13 The melting and boiling points of substance Y is as follow:

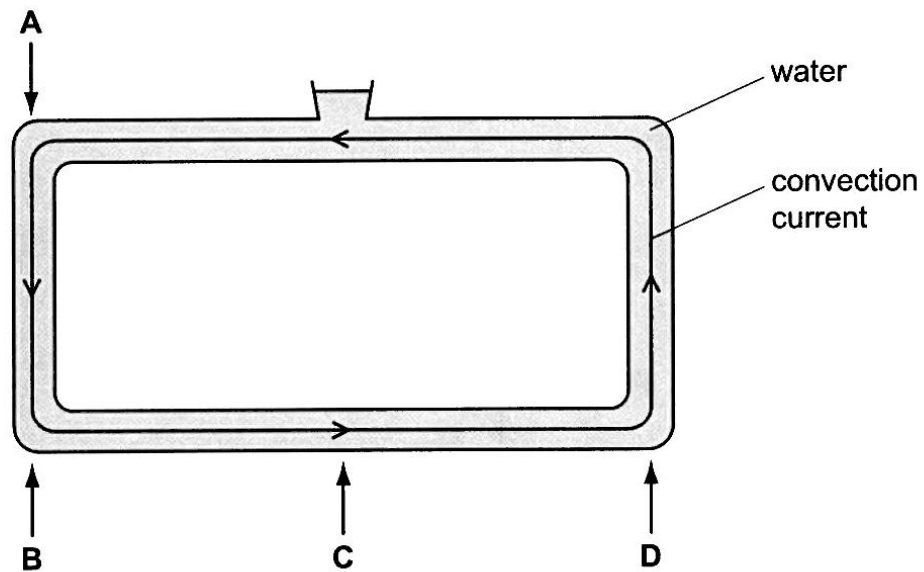
melting point / °C	boiling point / °C
-30	-10

Which diagram represents the change in arrangement of the particles in substance Y as it is heated from -23 °C to -5 °C ?

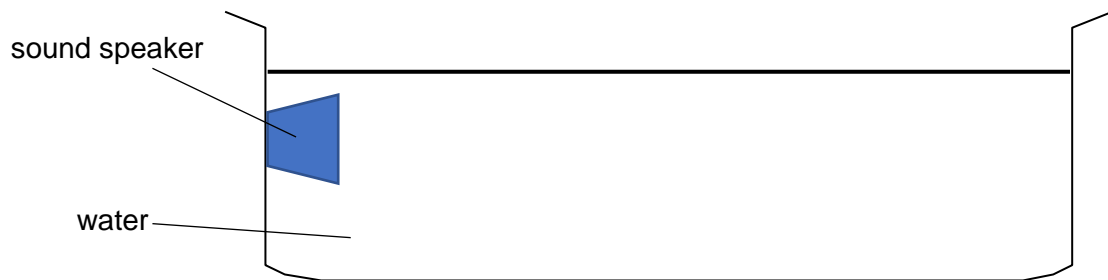


- 14 The diagram shows a convection current produced when water in an upright container is heated.

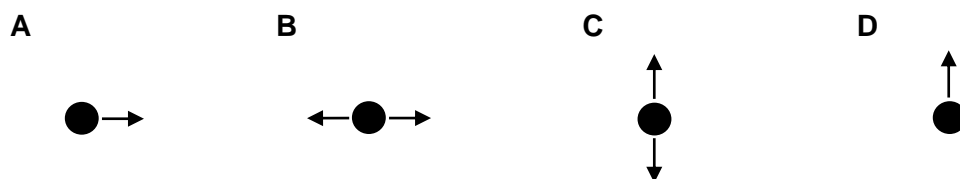
Where is the container heated to produce the convection current?



- 15 The diagram shows a sound speaker placed at one side of a water tank. It is used to project music in the water.



Which diagram shows the correct motion of the water particles in the water when the music is playing in the water.?



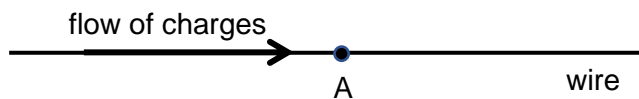
- 16 Which row shows the correct order of the speed of sound in the different media?

	slowest → fastest		
A	air	iron	water
B	air	water	iron
C	iron	air	water
D	iron	water	air

- 17 What is the unit of the electromotive force of a battery?

- A** ampere **B** coulomb
C newton **D** volt

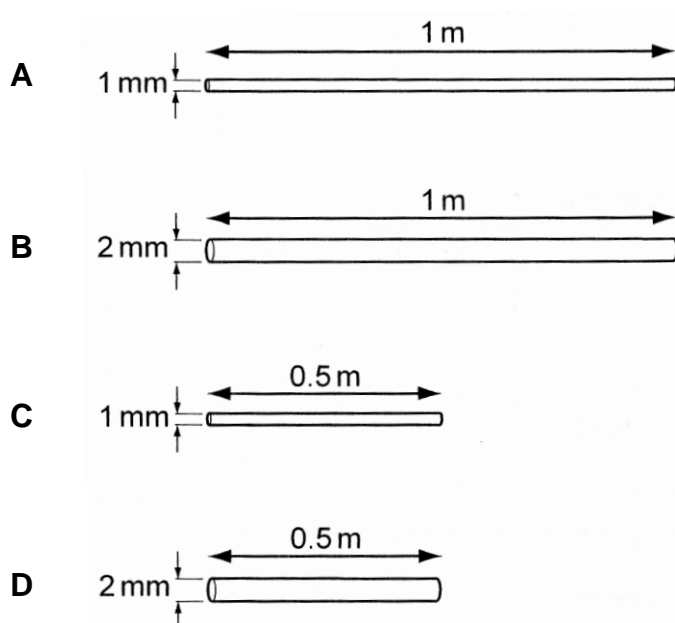
- 18 The diagram shows charges of 20 C flowing through a point A in a wire in 2.0 s.



What is the current passing through the wire?

- A** 1.0 A **B** 10 A **C** 20 A **D** 40 A
- 19 Each of the four wires is made of the same material.

Which wire has the largest resistance?



20 The current flowing through an appliance is 4.5 A.

Which fuse is suitable to use in the appliance?

- A** a fuse with a rating of 4 A
- B** a fuse with a rating of 6 A
- C** a fuse with a rating of 8 A
- D** a fuse with a rating of 10 A

End of Paper

[Turn over